ABSTRACT

A vector modulator including an offset QPSK modulator operative for receiving input data and generating a first output signal representing the modulation to be imposed on a carrier signal to effect offset QPSK modulation of the input signal and a second output signal representing an amplitude of the input data; and a frequency modulator including a sigma-delta modulator, operative for receiving the first output signal generated by the offset QPSK modulator, and generating a control signal representing the desired frequency of the carrier signal such that the carrier signal represents the input signal offset QPSK modulated. The vector modulator also includes a phase-lock loop circuit having a voltage controlled oscillator for generating the carrier signal and a programmable frequency divider for receiving the control signal as an input signal and for changing the frequency of the carrier signal in accordance with the control signal, and an amplifier having a variable gain which is operative for receiving and amplifying the carrier signal output by the phase-lock loop circuit in accordance with the amplitude of the second output signal.